

NEGLECT IS WORST ENEMY OF THE STORAGE BATTERY

An Autopsy on Cells Which Have Met an Untimely End—Symptoms of Trouble and How to Meet Them.

By J. EDWARD SCHUPPER of "The Automobile."

When a man's pulse becomes too rapid, it is generally accompanied by a fever. In the same way, when a battery's temperature rises, it is a sign of trouble. Even a slight rise in its temperature indicates to a physician that a process of destruction is going on in his body. The heart is pumping blood rapidly, and the index of heat is showing the body cells. In the same way, the electrical anatomy of the car may be of doubtful and electrical energy may be flowing too rapidly to the storage battery. In other words, charging is occurring at too rapid a rate. It is being overfed and the result is that the temperature rises too great and beyond the physical strength of the lead grids with the active material which is pasted into them. This causes the plates to warp and bend against the insulation. If it continues for a length of time the insulation will become down and a short circuit between adjacent plates puts an end to the activities of this part of the battery.

This high temperature, which occurs from charging at too high a rate, also has its effect on the active material. It gradually becomes burned through and hard. The color of a normal positive plate is a reddish chocolate brown. Deviations from this color show that some circumstances, which should not have existed have had their effect on the active material.

Every time one of the wooden separators or insulators is broken down it puts the negative and positive plates on one side of it out of business. These plates must be isolated from one another in order that the current produced by their relationship may flow through the electrolyte, over the exterior and back again to the battery. When they are in contact, due to the breaking down of an insulator, they are short circuited upon each other and subtract their value from the strength of the battery.

It is readily possible for the battery service men to judge from the condition of the separator how the battery has been treated. If the battery is in good condition, the separator will be a uniform color. If it is in poor condition, it will be a mottled color. A completely charged battery will give a reading of between 1.25 and 1.30, and if any cell is found to be below this reading, it should be brought into the service station.

Starvation can bring down the vitality and health of a man just as surely as it can a battery. A battery which has been starved for some time cannot be given a heavy charge. It must be brought back to normal by a slow charge. A battery which has been starved for some time cannot be given a heavy charge. It must be brought back to normal by a slow charge.

If a heavy charge is sent into a battery that has been starved for some time, it will immediately overheat and then destroy the active material. If the battery is brought to a service station it is a slow reforming charge so that the temperature of the electrolyte does not rise above 100 degrees Fahrenheit at any time. The charge is continued until the gravity of the electrolyte rises as high as it will. When it is found that the gravity has remained the same for two or three days with continued charging, the battery is considered to be "rejuvenated" as far as possible.

In some cases, this rejuvenation may take place in a few days; at other times it may take from ten days to three weeks. It must be remembered, however, that just as starvation has left its mark on the constitution of a man, regardless of his recovery, it has in the same way made its mark on the battery. A battery which has been starved for some time cannot be given a heavy charge. It must be brought back to normal by a slow charge.

Batteries are very much like tires in a great many ways. If they are kept flat they will last a much longer time than if they are kept overinflated. This applies to both tires and batteries. The better the care given either the longer they will last, although each has a normal life. A battery's life, as a rule, runs from six to eight months. A leaky cell must be repaired as quickly as a leaky tube would be. It very often happens that the liquid in one cell will be found to have run much more rapidly than in other cells. This should be an immediate indication that something is wrong.

There is a leak through which the electrolyte is running away. The result is that the plates in this particular cell are being left dry and they will suffer in the way in which plates described and illustrated have suffered if the matter is not attended to at once. A cracked jar is generally due to traveling over a rough road with the battery not firmly clamped down. This corresponds very closely to a cut in the tire due to traveling over sharp stones on the road. If the leaky cell is not repaired at once it forces an additional load on the good cells and not only causes the deterioration of the dry cells left uncovered, but the electrolyte liquid but causes the good cells to overheat due to too rapid charging.

If a tire is filled with too much air it is overinflated and it is harmed just as much almost as with underinflation. The same way with a battery. It should not be filled too full because overinflation will cause the solution to get down into the battery box and the acid will quickly eat whatever metal or susceptible material with which it comes into contact. There is a little vent passage in the cell cover through which the water is put into the battery. The water should be well below this, as when the battery is in use gas bubbles are forming, which quickly causes the pressure in the battery to rise if relief is not offered by an uncovered vent. When this vent is not open the water and acid are naturally forced out and run down inside the box.

A mistake which is very often made is the addition of acid to the battery in order to bring the specific gravity reading on the hydrometer up to normal. No acid should be added by the owner except when far away from a service station, as it takes battery expert to know when the time has arrived for the acid to be put into the solution. If acid is added before it is necessary the solution becomes too strong and it is necessary to break the plates and separators, destroying the insulation and killing the entire battery. The effect is that when the battery is

charged when the strong solution has been added, the electrolyte becomes stronger and stronger until it is easily capable of breaking down the insulation. At this time of the year many car owners are thinking of storing their batteries for the winter. Improper methods of storing have destroyed many hundreds of batteries. There are two dangers in winter. First, that the battery will remain idle in a discharged state, allowing the active material to become hard, or second, the battery may freeze. Normally a battery will discharge at 20 degrees above zero. When the battery is fully charged and the electrolyte is up around 1.25 it will not freeze until 98 degrees below zero. Thus the danger of freezing is quite great on a discharged battery, but remote on a charged one.

The battery should be fully charged when it is put away for the winter and given an additional charge to bring it to its proper gravity reading. If the car is put away for the winter and the engine is left running, the battery will be charged and the engine will be running. The battery will be charged and the engine will be running. The battery will be charged and the engine will be running.

Not only a better battery but backed by Prest-O-Lite Service

MORTON W. SMITH HAS BIG PLANS

In Addition to Federal Will Sell Bour-Davis and Murray Cars.

When a man who is already well established in the truck business in this city suddenly announces that in addition to the sale of business vehicles he will take up the pleasure car line and introduce to Broadway two cars it never saw before he and his proposition are bound to be interesting.

This is the case with Morton W. Smith and the Bour-Davis and Murray cars, which he is now offering to the public. Together with the well-known Federal truck, Mr. Smith, while new to the automobile industry, has been a conspicuous figure as a successful business man in other lines for a long time. Before taking up the sale of automobiles he waited for this interesting proposition to come in his hands, so that he could apply sound business principles to it and be successful even if he never learned the difference between the clutch and the differential. He entered the field confidently, and not only saw his principles work out successfully, but learned all about all automobiles from end to end, so that he could speak with authority about them and seek in those cars he intended to sell the things he believed the public wanted.

Mr. Smith entered the industry by the truck route, because the relation of the truck to business interested him first. He tells the story simply and to the point, and the very determination of the truck route, because the relation of the truck to business interested him first. He tells the story simply and to the point, and the very determination of the truck route, because the relation of the truck to business interested him first.

The more rapidly a battery is charged the better the solution becomes, and therefore when it is removed from the car and charged on an external circuit where there is plenty of time it is much better to charge at 3 or 4 amperes than it is to charge at a higher rate where the temperature of the solution becomes dangerous and a factor in the destruction of the plates. If it goes above 110 degrees, as soon as a battery is crystallized or sulphated to any extent the slow rate of reforming charge becomes imperative or else the plates will be ruined. The plates will be ruined. The plates will be ruined. The plates will be ruined.

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With such thoughts in mind, I took the Federal line. This capable truck comes in various capacities and body styles to meet varying business needs. The five different capacity weights are one, one and a half, two, three and a half and five tons and all can carry an overload of 25 per cent.

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"Now I know that many persons are wondering why I added still another car to our line. It is not a hard question to answer. The most perfect and beautiful automobiles in the world are seen daily on Fifth avenue. After studying carefully the highest class foreign and domestic cars from every possible angle I had a desire to sell what would be generally acknowledged to be the handsomest car in America. So, I got into touch with my old friend William S. Murray, a capitalist of Pittsburgh and one of the first automobile enthusiasts in this country, and with him assisted in designing the Murray, an eight cylinder car of unusual beauty. I don't believe this car is second to any American or foreign model. It embodies all the best features in grace, power and economy to be found in the leading cars and sells delivered here at \$2,500.

"Associated with Mr. Murray are Mr. Bonifant and Mr. Vennel, each of whom contributed \$250,000 in cash to the enterprise. There is no stock of this company for sale. The factory is busy turning out cars and I'll have several of them here in a week. They will be located at 225 West Fifty-seventh street, near the pleasure car headquarters—just a step from Broadway.

"Three of the Murray cars will be on display in the showroom of the Hotel Astor, and the Bour-Davis will be shown in space 39 at the Grand Central Palace.

"Pittsburgh is famous for its long and steep hills, and all the earnest motorists of motor cars in the Middle West send cars to Pittsburgh to be tested out on these hills. The cars are driven from the factories to get their bearings smooth. Carnegie has much fun with his No. 1 Murray waiting around the bottom of the testing hills for victims. He has beaten every car that has accepted his challenge to a race up the steep grades, and has a standing bet of \$100 that he can beat any car in the country up any Pittsburgh hill in high gear."

STUDEBAKER PRICES UP.

Advances Go Into Effect About December 1.

L. J. Oliver, vice-president in charge of sales of the Studebaker Corporation, has announced that on or about December 1 prices of Studebaker cars—both the four and the six—would advance from \$15 to \$16 over prevailing prices.

In speaking of Studebaker's intention to advance prices, Mr. Oliver says:

"There have been advances on all materials entering into the manufacture of automobiles, especially on steel of all kinds, pig iron, castings, stampings, sheet metal, aluminum, leather and upholstery materials. The cost of these rapid advances, ranging from 10 to 150 per cent, Studebaker has steadily maintained list prices. Our inventory resources are unlimited, but we have emergency trucks and men ready at a moment's notice to make repairs on the road or to haul the car to the station if it has been in collision and put out of running condition. By working all night under the latter circumstances we are able to return the truck to its owner the following morning with a minimum loss of time for him.

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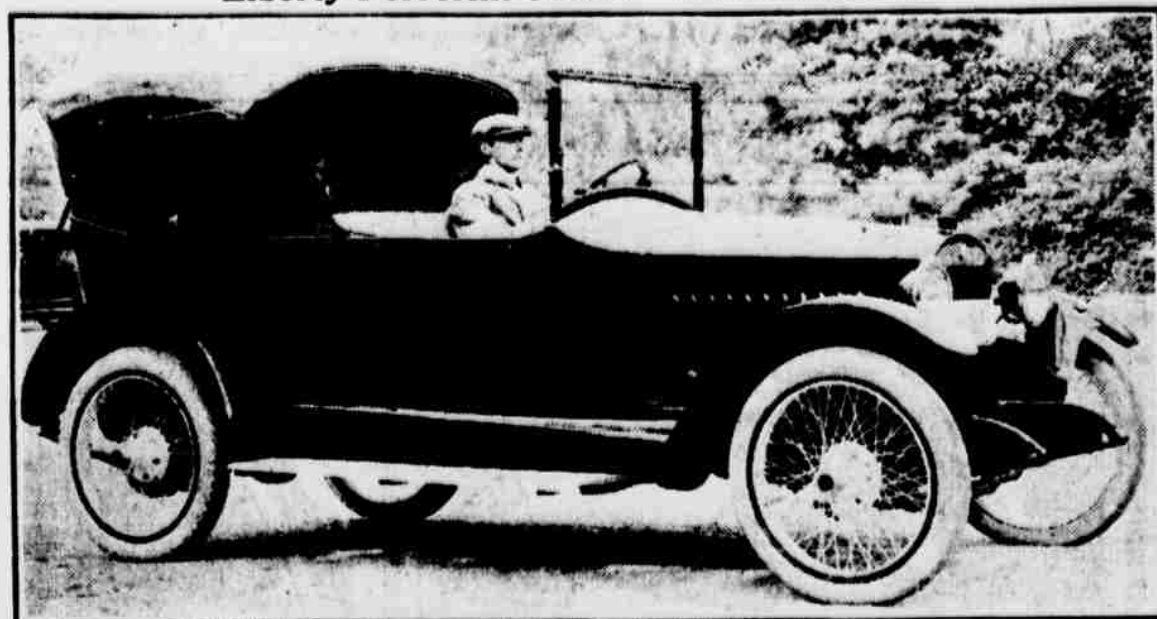
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Liberty Performs Just as Well as It Looks.



This is the new Liberty Victoria. This type of car, with its features of privacy and freedom from dust, is appealing more and more as a welcome expression of refinement in motoring. This model is on exhibition at the headquarters of Colonial Motors, Inc., Broadway near Fifty-fifth street, where John Plummer and his corps of experts will explain the fine points and then give you an eye opening demonstration. Liberty cars are making their way with smooth and rapid strides.

INTEREST IN DORT GROWS. 17 NEW CARS TO BE SHOWN AT PALACE

Biggest Show on Record to Be Held at Grand Central Palace Jan. 6 to 13.

One of the most important factors in the small car field is the Dort, and since it was taken in hand by C. T. Silver, the well known automobile merchant, there has been a veritable scramble among dealers in the territory which he controls to tie up with it.

In this city the Dort is receiving much attention among those who know cars. Its sturdy construction and powerful motor are making an especial appeal.

For 1917 the Dort line is concentrated on a single chassis which comes fitted with a five passenger touring body and a four door sedan body, both listed at \$495. There is also a choice for the winter months of a sedan enclosed body job and a special winter top.

In equipment the Dort compares favorably with cars having at much higher prices, as shown by the adoption of the Westinghouse starting and lighting system. The rear spring suspension also is a feature worthy of special notice. This consists of fifty-one eighth inch full cantilever springs and makes the Dort remarkably easy riding on the roughest sort of road, when should appeal to those about to buy cars now that the winter is about to set in and when roads are in poor condition after the heavy summer traffic.

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first drawing. More than this, it has been found necessary to take space on the fourth floor usually given over to accessories displays in order to accommodate ten makes of cars. When the all-over and drawing took place several weeks ago ninety-eight makes of cars were assigned space. Of this number seventeen will make their first appearance at the national show, being cars that have come upon the market during the last year.

The accessory section of the national shows will be greater than ever. The Motor and Accessory Manufacturers recently allotted space to 115 of its members, and to this number have been added 130 concerns not members of the association.

Pierce-Arrow Process. Each of the four five ton Pierce-Arrows in the service of the Milwaukee Western Fuel Company replaced from four to six double teams. The feet of four pairs out on less than twenty horses and does it with a big saving and improvement in the service.

This company began the use of trucks two years ago and has had such excellent results that the fifth is soon to be applied to service.

A minimum mileage of fifty per day is figured from each truck and seventy miles is a total frequently registered. The average per day for the fleet would not be less than sixty miles.

Used on a combination of city and country, the trucks will render close to 500 miles per gallon of gasoline.

Crawley Joins Saxon Corporation. George S. Moraw, president of the new Saxon Motor Corporation of New York, has just completed a tour of inspection in the Milwaukee department.

Mr. Moraw has many years experience in handling the territorial end of the business in the automobile district and has a large acquaintance among the dealers.

For the first time in the history of the national show all the space allotted to exhibitors has been filled, and at the

volume every day, Dodge Brothers are "losing business" by their policy of keeping production within the bounds of continuous betterment.

In that sense they have doubtless suffered a great loss in the past and will endure a great loss in the future.

But over against this great loss is an infinitely greater gain.

The people of the United States have implicit faith in the integrity of Dodge Brothers manufacturing methods.

One hundred thousand owners—or rather, one hundred thousand families—are practically of one mind concerning the car and the men who make it.

This business and its product are blessed with a friendship probably without parallel in the history of American manufacturing.

Fresh from the factory, or sold at second-hand, from one end of the nation to the other, the car has special value and a special reputation, because of the name it bears.

Because of the name it bears, you may be sure that the principle behind the car will never be changed a hair's breadth.

Dodge Brothers have only one idea in the upbuilding of their business.

That idea is to build so soundly and so well that the good will which they have won will grow and endure forever.

NATIONAL CO. IN BIG EXPANSION

Five Million Dollar Corporation Will Take Over Present Indianapolis Plant.

An important financial deal in the automobile industry is announced in the formation of the National Motor Car and Vehicle Corporation, a five million dollar New York corporation to take over the National Automobile factory at Indianapolis. This reincorporation will be the means of greatly increasing the capacity of the company. Big additions are to be made to the present factory, which is one of the oldest and strongest in the business. No change is to be made in the present successful management, which will remain in active control of the company.

A. C. Newby, president, William Guy Wall, vice-president, and George M. Jackson, secretary-treasurer and general manager, will continue as the same officers in the new corporation. These men have been in active charge of the National factories since that institution was founded in 1906. Directors of the new corporation will be in addition to the three men mentioned above: Stoughton A. Fletcher, president of the Fletcher American National Bank of Indianapolis; O. J. Thomen of Redmond & Co. of New York; Leonard Sider of Leonard Sider & Co. of New York; Russell Hollister of Dyne, Kenhall & Hollister of New York.

That the reputation of the National company as a successful institution was widely known is best evidenced by the fact that the increased stock was oversubscribed to the extent that subscribers were allocated less than one-third of the amounts asked.

During the past year the National company built and sold more than three times the number of cars sold the previous year, and even then more than one-third of the actual orders received had to go unfilled. This tremendous increase of 300 per cent. caused the conservative National company to realize that was now the opportune time to increase the factory to the size necessary to handle the business being received.

The business being received. The company is now just completing a three-story reinforced concrete building, 380 feet long and 60 feet wide, which will be in use before the first of December.

CARLSTROM'S GREEN JACKETS.

Splendid Plugs Give Him Great Service Always.

It will be of interest to automobile owners who have travelled at the speed of 124 miles an hour made by Victor Carlstrom in his aeroplane that the machine was equipped with sixteen Splendid plugs. These plugs performed perfectly in the long flight from Chicago to Governors Island, and it was "some service" they had to give. The 200 horse-power motor in the long, hard test.

A Great Loss and a Greater Gain

Dodge Brothers business has rounded out twenty-two months of existence by distributing to owners more than one hundred thousand cars.

Price-concessions on this car are rarely asked, and never given with Dodge Brothers consent or to their knowledge.

You can therefore figure accurately the amount invested by the public in Dodge Brothers cars, by multiplying the output by the retail selling price.

One hundred thousand cars at \$785 per car means a sales-total in less than two years' time of \$78,500,000—or, with freight-cost added, considerably more than \$80,000,000.

There have been no bursts of speed in the up-building of this great business.

At no time has there been even an attempt at stimulation of sales or of production.